



SURFACE VEHICLE RECOMMENDED PRACTICE

J3120™

DEC2024

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Superseding J3120 OCT2018

Sound Level Determination for Snowmobiles under Typical Trail Operating Conditions

RATIONALE

This new procedure attempts to determine the average sound pressure level of a snowmobile during typical trail operation. It consists of averaging a steady vehicle speed SPL with a wide-open throttle acceleration SPL. Weighting is applied on both SPL prior to averaging. This new standard defines a sound level value that is more representative of general public perception. Reduction of the sound level emitted by a snowmobile based on this method would translate to a higher acknowledgement by the general public.

The weighting factor determination is based on ISO 362-1:2015 used to determine the urban sound level of motorcycles, based on vehicle power to mass ratio (PMR). The PMR of currently available snowmobiles ranges between 75 and 400. That range of PMR yields to weighting factors ranging from 42.5 to 52.5%. Using a median value of 47.5% for all models introduces an error in the order of 0.5 dBA and therefore is used in this document to simplify its use.

SAE J3120 has been reaffirmed to comply with the SAE Five-Year Review policy.

FOREWORD

This SAE Recommended Practice is intended as a guide towards standard practice, but may be subject to frequent change to keep pace with experience and technical advances.

1. SCOPE

This SAE Recommended Practice establishes the method to determine Sound Level of a snowmobile under typical trail operating conditions.

Snowmobiles have different engine power levels that depends on the model.

2. REFERENCES

2.1 Applicable Documents

The following publication form a part of this specification to the extent specified herein. Unless otherwise indicated, the latest issue of SAE publication shall apply.

2.1.1 SAE Publications

Available from SAE International, 400 Commonwealth Drive, Warrendale, PA 15096-0001, Tel: 877-606-7323 (inside USA and Canada) or +1 724-776-4970 (outside USA), www.sae.org.

SAE J192 Maximum Exterior Sound Level for Snowmobiles

SAE J1161 Operational Sound Level Measurement Procedure for Snowmobiles

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For more information on this standard, visit
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Documents

Standard, visit Sharing Hub

2.2 Related Publication

The following publications are provided for information purposes only and are not a required part of this SAE Technical Report.

2.2.1 ISO Publication

Available from International Organization for Standardization, ISO Central Secretariat, 1, ch. de la Voie-Creuse, CP 56, CH-1211 Geneva 20, Switzerland, Tel: +41 22 749 01 11, www.iso.org.

ISO 362-1:2015 Measurement of noise emitted by accelerating road vehicles – Engineering method

3. INSTRUMENTATION

The instrumentation requested by SAE J192 and SAE J1161 shall be used for respective measurements.

4. TEST SITE

The test site requested by SAE J192 and SAE J1161 shall be used for respective measurements.

5. MEASUREMENT PROCEDURE

The measurement procedure requested by SAE J192 and SAE J1161 shall be used for respective measurements.

6. ENVIRONMENTAL CORRECTION

The environmental correction requested by SAE J192 and SAE J1161 should be used for respective measurements.

7. SOUND LEVEL DETERMINATION

Equation 1 determines the sound pressure level under typical trail operating condition.

$$L_{trail} = L_{J192} - 0.475(L_{J192} - L_{J1161}) \quad (\text{Eq. 1})$$

where:

L_{trail} , L_{J192} and L_{J1161} are expressed in dBA and determined by SAE J192 and SAE J1161.

The obtained L_{trail} is rounded to the nearest integer.

8. GENERAL COMMENTS

- 8.1 It is recommended that the measurement using SAE J192 and SAE J1161 are done on the same day under the same test condition since environmental and ground conditions can introduce significant variations of the measured sound pressure level

9. NOTES

9.1 Revision Indicator

A change bar (I) located in the left margin is for the convenience of the user in locating areas where technical revisions, not editorial changes, have been made to the previous issue of this document. An (R) symbol to the left of the document title indicates a complete revision of the document, including technical revisions. Change bars and (R) are not used in original publications, nor in documents that contain editorial changes only.